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0507

#7



OIEP

ENTERED

RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/020,674

DATE: 05/02/2002

TIME: 15:37:07

Input Set : A:\06501-092001.TXT

Output Set: N:\CRF3\05022002\J020674.raw

4 <110> APPLICANT: Yamamoto, Hiroaki
 5 Onodera, Keiko
 6 Tani, Yoshiki
 8 <120> TITLE OF INVENTION: NOVEL (R)-2,3-BUTANEDIOL DEHYDROGENASE
 11 <130> FILE REFERENCE: 06501-092001
 13 <140> CURRENT APPLICATION NUMBER: 10/020,674
 C--> 14 <141> CURRENT FILING DATE: 2002-04-19
 16 <150> PRIOR APPLICATION NUMBER: JP 2000-333363
 17 <151> PRIOR FILING DATE: 2000-10-31
 19 <160> NUMBER OF SEQ ID NOS: 17
 21 <170> SOFTWARE: FastSEQ for Windows Version 4.0
 23 <210> SEQ ID NO: 1
 24 <211> LENGTH: 1143
 25 <212> TYPE: DNA
 26 <213> ORGANISM: Pichia angusta
 28 <400> SEQUENCE: 1
 29 atgaaagggtt tactttatta cggtagaaac gatattcgt actccgaaac ggttcctgaa 60
 30 ccggagatca agaattccaa cgtatgtcaag atcaaagtca gctattgtgg aatctgtggc 120
 31 acggacttga aagaattcac atattctgga ggtcctgttt tttccctaa acaaggcacc 180
 32 aaggacaaga tttcgggata cgaacttcct ctctgtcctg gacatgaatt tagcggaaacg 240
 33 gtggtcgagg ttggtctctg tgtcacaagt gtgaaacctg gtgacagagt cgagttgaa 300
 34 gctacgtcgc attgtctcga cagatcgccg tacaaggaca cggtcgcccc agaccttggg 360
 35 ctctgtatgg cctgccagag cggatctccg aactgctgtg cgtcgtctgag cttctgcggt 420
 36 ttgggtggtg ccagcggcgg ttttgccgag tacgtcgttt acggtgagga ccacatggtc 480
 37 aagctgccag actcgattcc cgacgatatt ggagcactgg ttgagcctat ttctgttgcc 540
 38 tggcatgctg ttgaacgcgc tagattccag cctggtcaga cggccctggt tcttgagga 600
 39 ggtcctatcg gccttgccac cattcttgct ctgcaaggcc atcatgcggg caaaattgtg 660
 40 tgttccgagc cggccttgat cagaagacag tttgcaaagg aactgggcgc tgaagtgttc 720
 41 gatccttcta catgtgacga cgcaaatgct gttctcaagg ctatggtgcc ggagaacgag 780
 42 ggattccatg cagccttcga ctgctctggt gttcctcaga cattcaccac ctcaattgtc 840
 43 gccacgggac cttctggaat cgccgtcaat gtggccgttt ggggagacca cccaattgga 900
 44 ttcatgccaa tgtctctgac ttaccaggag aaatacgcta ccggctccat gtgctacacc 960
 45 gtcaaggact tccaggaagt tgtcaaggcc ttggaagatg gtctcatatc tttggacaaa 1020
 46 gcgcgcaaga tgattacagg caaagtcac ctaaaggacg gagtcgagaa gggctttaa 1080
 47 cagctgatcg agcacaagga gaacaatgtc aagatcctgg tgacgccgaa cgaggtttcc 1140
 48 taa 1143
 50 <210> SEQ ID NO: 2
 51 <211> LENGTH: 380
 52 <212> TYPE: PRT
 53 <213> ORGANISM: Pichia angusta
 55 <400> SEQUENCE: 2
 56 Met Lys Gly Leu Tyr Tyr Gly Thr Asn Asp Ile Arg Tyr Ser Glu
 57 1 5 10 15

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58 Thr Val Pro Glu Pro Glu Ile Lys Asn Pro Asn Asp Val Lys Ile Lys
59          20          25          30
60 Val Ser Tyr Cys Gly Ile Cys Gly Thr Asp Leu Lys Glu Phe Thr Tyr
61          35          40          45
62 Ser Gly Gly Pro Val Phe Phe Pro Lys Gln Gly Thr Lys Asp Lys Ile
63          50          55          60
64 Ser Gly Tyr Glu Leu Pro Leu Cys Pro Gly His Glu Phe Ser Gly Thr
65 65          70          75          80
66 Val Val Glu Val Gly Ser Gly Val Thr Ser Val Lys Pro Gly Asp Arg
67          85          90          95
68 Val Ala Val Glu Ala Thr Ser His Cys Ser Asp Arg Ser Arg Tyr Lys
69          100          105          110
70 Asp Thr Val Ala Gln Asp Leu Gly Leu Cys Met Ala Cys Gln Ser Gly
71          115          120          125
72 Ser Pro Asn Cys Cys Ala Ser Leu Ser Phe Cys Gly Leu Gly Gly Ala
73          130          135          140
74 Ser Gly Gly Phe Ala Glu Tyr Val Val Tyr Gly Glu Asp His Met Val
75 145          150          155          160
76 Lys Leu Pro Asp Ser Ile Pro Asp Asp Ile Gly Ala Leu Val Glu Pro
77          165          170          175
78 Ile Ser Val Ala Trp His Ala Val Glu Arg Ala Arg Phe Gln Pro Gly
79          180          185          190
80 Gln Thr Ala Leu Val Leu Gly Gly Gly Pro Ile Gly Leu Ala Thr Ile
81          195          200          205
82 Leu Ala Leu Gln Gly His His Ala Gly Lys Ile Val Cys Ser Glu Pro
83          210          215          220
84 Ala Leu Ile Arg Arg Gln Phe Ala Lys Glu Leu Gly Ala Glu Val Phe
85 225          230          235          240
86 Asp Pro Ser Thr Cys Asp Asp Ala Asn Ala Val Leu Lys Ala Met Val
87          245          250          255
88 Pro Glu Asn Glu Gly Phe His Ala Ala Phe Asp Cys Ser Gly Val Pro
89          260          265          270
90 Gln Thr Phe Thr Thr Ser Ile Val Ala Thr Gly Pro Ser Gly Ile Ala
91          275          280          285
92 Val Asn Val Ala Val Trp Gly Asp His Pro Ile Gly Phe Met Pro Met
93          290          295          300
94 Ser Leu Thr Tyr Gln Glu Lys Tyr Ala Thr Gly Ser Met Cys Tyr Thr
95 305          310          315          320
96 Val Lys Asp Phe Gln Glu Val Val Lys Ala Leu Glu Asp Gly Leu Ile
97          325          330          335
98 Ser Leu Asp Lys Ala Arg Lys Met Ile Thr Gly Lys Val His Leu Lys
99          340          345          350
100 Asp Gly Val Glu Lys Gly Phe Lys Gln Leu Ile Glu His Lys Glu Asn
101          355          360          365
102 Asn Val Lys Ile Leu Val Thr Pro Asn Glu Val Ser
103          370          375          380
105 <210> SEQ ID NO: 3
106 <211> LENGTH: 10
107 <212> TYPE: PRT

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108 <213> ORGANISM: Pichia angusta
110 <400> SEQUENCE: 3
111 Lys Pro Gly Asp Arg Val Ala Val Glu Ala
112 1 5 10
114 <210> SEQ ID NO: 4
115 <211> LENGTH: 21
116 <212> TYPE: PRT
117 <213> ORGANISM: Pichia angusta
119 <400> SEQUENCE: 4
120 Ala Thr Ser His Cys Ser Asp Arg Ser Arg Tyr Lys Asp Thr Val Ala
121 1 5 10 15
122 Gln Asp Leu Gly Leu
123 20
125 <210> SEQ ID NO: 5
126 <211> LENGTH: 6
127 <212> TYPE: PRT
128 <213> ORGANISM: Pichia angusta
130 <400> SEQUENCE: 5
131 Phe His Ala Ala Phe Asp
132 1 5
134 <210> SEQ ID NO: 6
135 <211> LENGTH: 20
136 <212> TYPE: DNA
137 <213> ORGANISM: Artificial Sequence
139 <220> FEATURE:
140 <223> OTHER INFORMATION: Artificially synthesized primer sequence
W--> 142 <221> NAME/KEY: misc_feature
143 <222> LOCATION: 6, 9, 15, 18
144 <223> OTHER INFORMATION: n = a, c, g, or t
W--> 146 <400> 6
W--> 147 aarccnggng aymgngtngc 20
149 <210> SEQ ID NO: 7
150 <211> LENGTH: 20
151 <212> TYPE: DNA
152 <213> ORGANISM: Artificial Sequence
154 <220> FEATURE:
155 <223> OTHER INFORMATION: Artificially synthesized primer sequence
W--> 157 <221> NAME/KEY: misc_feature
158 <222> LOCATION: 9, 12
159 <223> OTHER INFORMATION: n = a, c, g, or t
W--> 161 <400> 7
W--> 162 tcrtcraang cngcrtgraa 20
164 <210> SEQ ID NO: 8
165 <211> LENGTH: 530
166 <212> TYPE: DNA
167 <213> ORGANISM: Pichia angusta
169 <400> SEQUENCE: 8
170 aagccgggtg atcgtgtcgc agttgaagct acgtcgcatt gctccgacag atcgcgctac 60
171 aaggacacgg tcgcccaaga cttgggctc tgtatggcct gccagagcgg atctccgaac 120

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172 tgctgtgcgt cgctgagctt ctgcggtttg ggtggtgccg gcggcggttt tgccgagtac 180
173 gtogttttacg gtgaggacca catggtcaag ctgccagact cgattcccga cgatattgga 240
174 gcaactggttg agcctatttc tgttgccctg catgctgttg aacgcgctag attccagcct 300
175 ggtcagacgg ccctggttct tggaggaggt cctatcgcc ttgccaccat tcttgctctg 360
176 caaggccatc atgcgggcaa aattgtgtgt tccgagccgg ccttgatcag aagacagttt 420
177 gcaaaggaac tgggcgctga agtgttcgat cttctacat gtgacgacgc aaatgctgtt 480
178 ctcaaggcta tggtgccgga gaacgaggga ttccacgccg cttcgatga 530
180 <210> SEQ ID NO: 9
181 <211> LENGTH: 26
182 <212> TYPE: DNA
183 <213> ORGANISM: Artificial Sequence
185 <220> FEATURE:
186 <223> OTHER INFORMATION: Artificially synthesized primer sequence
190 <400> SEQUENCE: 9
191 ttggcatgcg atctgtcggg gcaatg 26
193 <210> SEQ ID NO: 10
194 <211> LENGTH: 27
195 <212> TYPE: DNA
196 <213> ORGANISM: Artificial Sequence
198 <220> FEATURE:
199 <223> OTHER INFORMATION: Artificially synthesized primer sequence
203 <400> SEQUENCE: 10
204 tgagcatgca aatgctgttc tcaaggc 27
206 <210> SEQ ID NO: 11
207 <211> LENGTH: 107
208 <212> TYPE: DNA
209 <213> ORGANISM: Pichia angusta
211 <400> SEQUENCE: 11
212 gaatttagcg gaacgggtgt cgagggttgc tctggtgtca caagtgtgaa acctggtgac 60
213 agagtgcgag ttgaagctac gtgcgattgc tccgacagat cgcattgc 107
215 <210> SEQ ID NO: 12
216 <211> LENGTH: 706
217 <212> TYPE: DNA
218 <213> ORGANISM: Pichia angusta
220 <400> SEQUENCE: 12
221 gcatgcaaat gctgttctca aggctatggt gcgggagaac gagggattcc atgcagcctt 60
222 cgactgctct ggtgttcctc agacattcac cacctcaatt gtgccacgg gaccttctgg 120
223 aatcgccgtc aatgtggcgg tttggggaga ccaccaatt ggattcatgc caatgtctct 180
224 gacttaccag gagaaatacg ctaccggctc catgtgtctac accgtcaagg acttccagga 240
225 agttgtcaag gccttgaag atggtctcat atctttggac aaagcgcgca agatgattac 300
226 aggcaaagtc cacctaaagg acggagtcca gaagggcttt aaacagctga tcgagcacia 360
227 ggagaacaat gtcaagatcc tggtgacgcc gaacgaggtt tctaactaa taatatacat 420
228 acatcataca tatgtatgtc cttagagcaa gacttgcgca ttaggaaaaa tagctggtag 480
229 tttgcattat ggtggcgggc ctcccaggaa attaacttat gatttacata tggactcgat 540
230 tacgtaacag gtgctgagca ttttaataatt acctactatt ttctaaatta gtaaattgta 600
231 tgtttcttga gcaggaggag atactagagc aatttcaaaa catctccaat tgccaaatcc 660
232 ctgtgtccga acagattgca ttgctagagt ctgtgaactg gaattt 706
234 <210> SEQ ID NO: 13
235 <211> LENGTH: 620

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236 <212> TYPE: DNA
237 <213> ORGANISM: Pichia angusta
239 <400> SEQUENCE: 13
240 tgacattcca caccaacttc tgccgccacc actgcaatcc tgtaggcgaa caggacgatg      60
241 caggactatt tctctatttt ttcccatcgt gcaccctgaa ccaatacggg ggaggcatgg      120
242 gaattttccg cgctaattcca gtcaacggta acaagaccag gatggagtgt gaatatttct      180
243 ttgacggcag cgatgaggag ttcgaggcct acttcaagtt tgccagacag gtcgcactcg      240
244 aggatatttg gctgtgtgag gcggcccaac agaaccttat aagtggggtg taccaacagg      300
245 gcttgctgca tcctaaaaaa gaagtcgggg tggtttacta ccagtcgctg gttcgtgaaa      360
246 gaataatggc ttagctccga gatgtggagg cagtctggtc agactgtgcg gcaattaaat      420
247 aagacgcgga tgtactgcac cagagtgaat aaaggaattc caattcgata gcaaataattg      480
248 ctgtaataat gagtgaccag atttattacc gaacctagcc agcccggggt tttttacaca      540
249 ataggaaaaa aaggactcga ttattcgatg ctgctgcaaa tcacgccaga cataataagt      600
250 caccggttta ctccgcatgc
252 <210> SEQ ID NO: 14
253 <211> LENGTH: 30
254 <212> TYPE: DNA
255 <213> ORGANISM: Artificial Sequence
257 <220> FEATURE:
258 <223> OTHER INFORMATION: Artificially synthesized primer sequence
260 <400> SEQUENCE: 14
261 tgccctgcagc gccagacata ataagtcacc      30
263 <210> SEQ ID NO: 15
264 <211> LENGTH: 523
265 <212> TYPE: DNA
266 <213> ORGANISM: Pichia angusta
268 <400> SEQUENCE: 15
269 ctgcagcgcc agacataata agtcacccgt ttactccgca tgcactcccc cactgatcat      60
270 gattaatggt tctggacggc taaatcattg atcactgcgt cccggacctc gtaccgacgt      120
271 ggaaattagc cggcactcgg ttgtgagaga ttatcctata taaaccacaa aatcctatct      180
272 cccttttgcc aatgaaagggt ttactttatt acggtacaaa cgatattcgc tactccgaaa      240
273 cggttcctga accggagatc aagaatccca acgatgtcaa gatcaaagtc agctattgtg      300
274 gaatctgtgg cacggacttg aaagaattca catattctgg aggtcctggt tttttcccta      360
275 aacaaggcac caaggacaag atttcgggat acgaacttcc tctctgtcct ggacatgaat      420
276 ttagcggaac ggtggtcgag gttggctctg gtgtcacaag tgtgaaacct ggtgacagag      480
277 tcgcagttga agctacgtcg cattgctccg acagatcgca tgc
279 <210> SEQ ID NO: 16
280 <211> LENGTH: 30
281 <212> TYPE: DNA
282 <213> ORGANISM: Artificial Sequence
284 <220> FEATURE:
285 <223> OTHER INFORMATION: Artificially synthesized primer sequence
287 <400> SEQUENCE: 16
288 tgctcatgaa aggtttactt tattacggta      30
290 <210> SEQ ID NO: 17
291 <211> LENGTH: 28
292 <212> TYPE: DNA
293 <213> ORGANISM: Artificial Sequence
295 <220> FEATURE:

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RAW SEQUENCE LISTING ERROR SUMMARY DATE: 05/02/2002
PATENT APPLICATION: US/10/020,674 TIME: 15:37:08

Input Set : A:\06501-092001.TXT
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Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:6; N Pos. 6,9,15,18

Seq#:7; N Pos. 9,12

VERIFICATION SUMMARY

PATENT APPLICATION: US/10/020,674

DATE: 05/02/2002

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Input Set : A:\06501-092001.TXT

Output Set: N:\CRF3\05022002\J020674.raw

L:14 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:142 M:281 W: Numeric Fields not Ordered, <221> Sort in ascending order!
L:146 M:258 W: Mandatory Feature missing, <220> not found for SEQ ID#:6
L:147 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6 after pos.:0
L:157 M:281 W: Numeric Fields not Ordered, <221> Sort in ascending order!
L:161 M:258 W: Mandatory Feature missing, <220> not found for SEQ ID#:7
L:162 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7 after pos.:0